“A Prolific Individual ”- Queensland Railways and the work of George Phillips

Prepared by Greg Hallam

Historian with QueenslandRail

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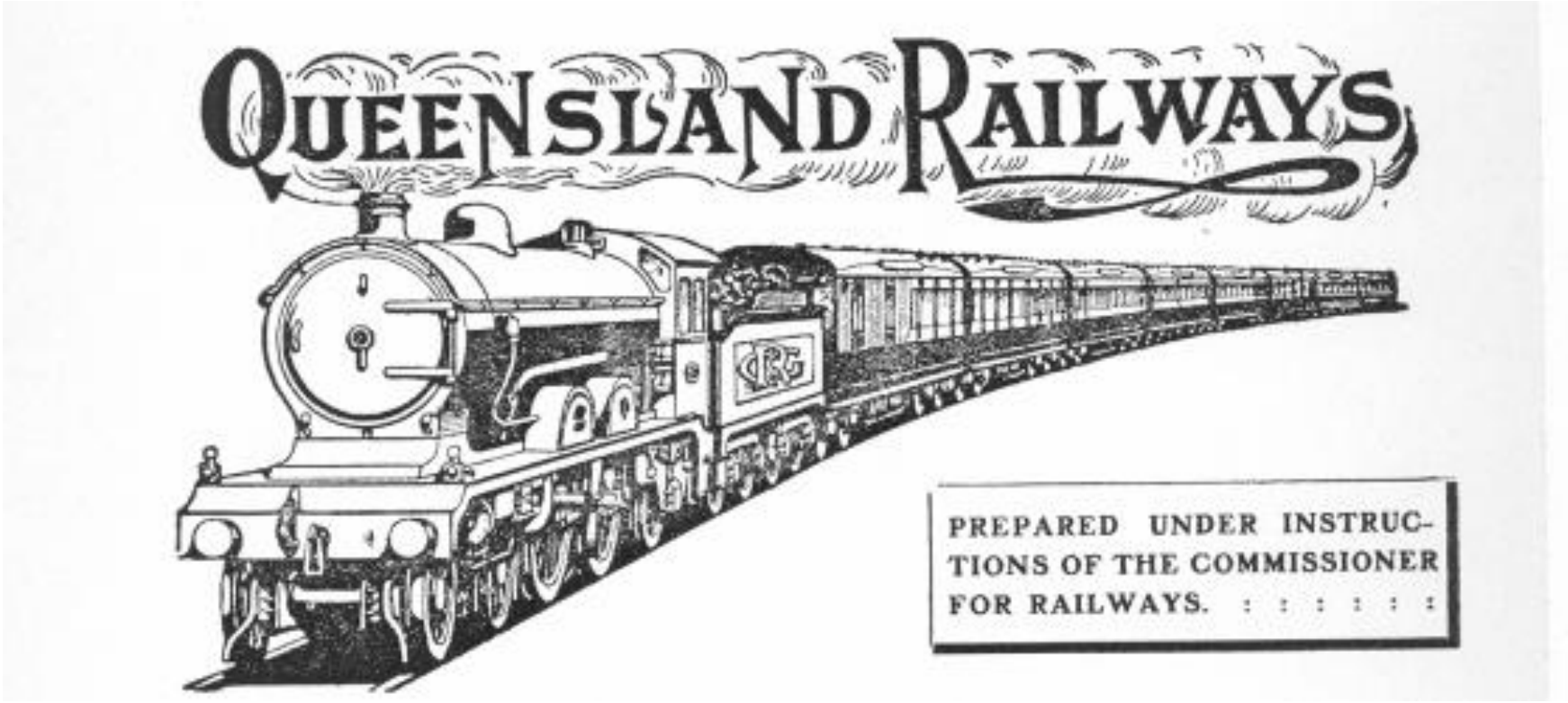
QUEENSLAND RAILWAYS
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PREPARED UNDER INSTRUC-
TIONS OF THE COMMISSIONER
FOR RAILWAYS.

Queensland Railways – A story of sleepers and Engineers

In July, 2016, at a special ceremony at the Normanton railway station, several hundred people including descendants of George Phillips, the surveyor who championed and designed this unique railway in the Gulf Country of Queensland, gathered to recognise 125 years since the completion of the railway to Croydon. The Officer in Charge of the Normanton Railway, Ken Fairbairn, is as proud in his role as the custodian of this remarkable railway as in the story of its creation. Remarkably, many of the rails and sleepers are still in good condition despite decades in the heat and wet of this part of Queensland.

The eccentric railway, separated from the rest of the railway network of Queensland retains a strong fascination for many people, with many thousands making the journey. along it every year. Even more remarkable, the work and memory of George

Phillips is still remembered proudly by his descendants nearly a century after his death. Phillips, in the context of the history of Europeans in Queensland is one of the larger than life figures, who had a long, productive, and very public life. At the time of his death in 1921, at the age of 77, he was referred to as one of the 'pioneers in the opening up of North Queensland'. In the latter part of the nineteenth century, and well into the early twentieth century, he was also equally acknowledged for his work in railway surveying. Phillips was a remarkably prolific individual, and his railway footprint can be found in many places throughout Queensland. Not only was he prolific in his working life, he was also prolific in the production of offspring. He fathered 15 children, and 14 were in attendance at his funeral. Railway historian, John Knowles sums him up as being:

> A man of tremendous breadth of interest, and [who] wrote knowledgeably and intelligently on ports, mining, agriculture, water supplies and Aboriginal ethnology. He was a Parliamentarian and an alderman. His actions and opinions were influential in Queensland for some 60 years, especially in railway matters.

George Phillips, photographed at Sandgate, 1907. JOL Negative number: 64716

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Phillips was born in Burslem, Staffordshire, England, in 1843. He arrived in New South Wales in 1851 at the age of eight, finishing his schooling at Parramatta. He studied for the Law at Sydney and Melbourne and his working life began in the office of a solicitor in Melbourne. He trained in Brisbane as a surveyor, completing his training at the age of 19.

According to family accounts, he wanted to travel north and enjoy an outdoor life and in 1862 he began as a surveyor for the Queensland Government, firstly in the Roads Department, then the Lands Department. He accompanied William Landsborough on an expedition west of Bowen Downs, to look for the members of the Victorian Exploring Expedition led by Burke and Wills. On his westward journey with Landsborough, the party reached the Diamantina River. In 1866, the first Europeans to do so, Landsborough was sent to Burketown, as the Government Resident while Phillips surveyed the township of Burketown.

An outbreak of Yellow Fever in Burketown drove both Landsborough and Phillips to look for a new settlement inland and the township site decided on was to become Normanton.

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Queensland Railways – A story of sleepers and Engineers

In 1867 Phillips explored from the Gulf south towards Cloncurry, activities that not only made him very familiar with the landscape and climate of that part of the North West, but later assisted him in his role as a surveyor and supervisor of railway lines. The following year Phillips was appointed staff surveyor for the Kennedy district, and made surveys of a number of towns and settlements in north Queensland, including Bowen, Townsville, Cardwell Ingham and Mackay. In 1874, Phillips was transferred to the Brisbane district, and five years later joined the Railway Department as 'Inspector of Railway Surveys in the Southern Division'.

He held this position until 1886, when he left the employment of the Queensland government to work with a private railway development company. The initial railway scheme that Phillips was instrumental in investigating was to link the mineral fields of the Cloncurry region to a port in the Gulf of Carpentaria.

Ramsay Street, Cloncurry around 1910-12. Queensland Rail Historical Collection

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Phillips had recommended in 1884 that the Norman river should be the port for any railway leading inland, and that a line be built to Hughenden with a branch to Cloncurry. Despite Phillips advocating of the Norman port, Townsville would become the primary port and rail centre for north Queensland. Normanton would become the port of the Gulf of Carpentaria. Phillips was well-practiced advocate for his pioneer railways, and saw the building of the railway in the Gulf as an opportunity to demonstrate his pioneer line principles. In 1886, he wrote his first booklet on the subject, Railways for even country: their construction and cost', and in 1892 after completion of the Normanton to Croydon line followed with Pioneer Railways for Queensland.

He also corresponded regularly in newspapers with his concepts.

The 'no frills' railway, found favour with the then Premier of Queensland, Sir Samuel Walker Griffith had visited the Gulf country and met with George Phillips previously in Croydon, whilst the Premier was investigating the route of the proposed railway from Normanton to Cloncurry. Phillips also suggested that a branch be built off the Cloncurry line to Croydon, making the line to Cloncurry shorter again. Griffith seems to have been taken with the Phillips plan for the Cloncurry line, and crucially that his pioneer railway system be used for its construction.

Parliament disagreed. Despite the support of the Premier, or perhaps because of that support, Parliament did not want to give support to what was still seen as an 'experimental' line built using the Phillips system.

Flood bound train on the Great Northern Railway around Cloncurry, 1911-12. QR Historical Collection.

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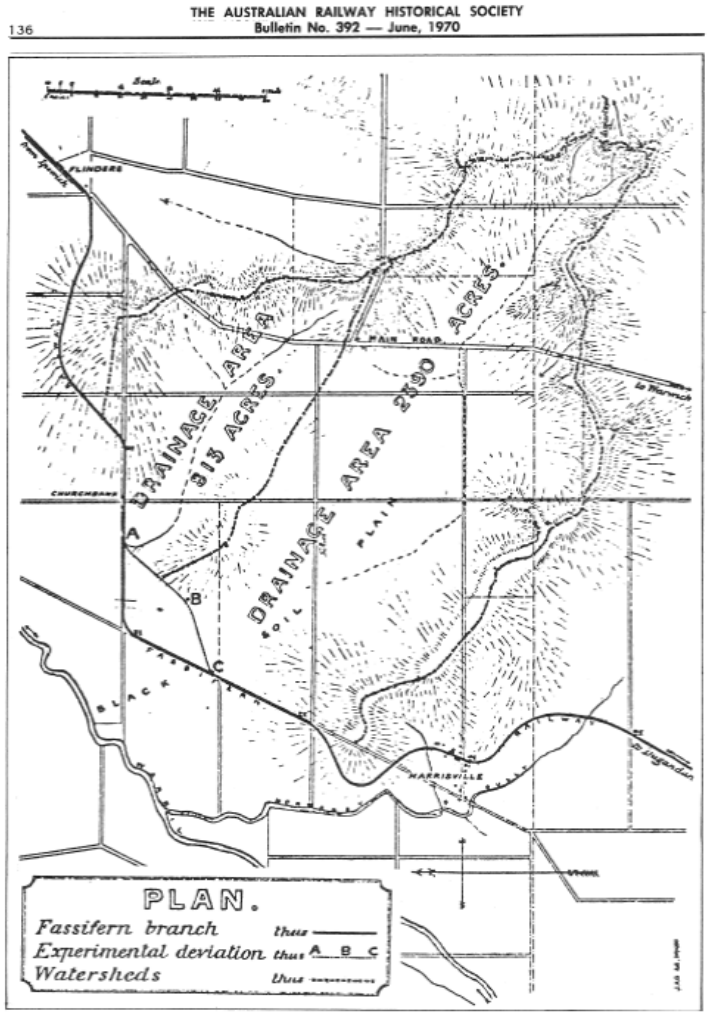
Parliament disagreed. Despite the support of the Premier, or perhaps because of that support, Parliament did not want to give support to what was still seen as an ‘experimental’ line built using the Phillips system. On 12 October 1886 in the Legislative Assembly, the Minister for Railways Miles laid plans for the first 38 miles (61 km) of the line from Normanton to Cloncurry on the table and, a week later on the 19 October 1886, he moved approval. Miles said the use of Phillips' patent steel sleepers was under consideration, although no decision had been made for their ultimate use. Willoughby Hannam the Chief Engineer of the Northern and Carpentaria Division also reported to Parliament, on the estimated costs for construction of the line.

As the system was still experimental, and any testing could cause a delay in construction, as a compromise, Miles suggested that the Beauaraba [Pittsworth] branch then under construction would be a convenient place to test them.

The section of line was built on leased land from a local landowner, (Seely). Sprignall, and Frost of Ipswich supplied the steel sleepers. Three weeks were taken for bridgeworks, and preparing the formation. The deviated section was a mile in length (1.6kms), and laid by 15 men, in six weeks. It carried regular traffic and construction trains for the Dugandan extension and was opened in June 1887. The line had been laid during a very wet period, when heavy floods affected much of southern Queensland.



The experimental section of deviated line on the Fassifern branch showing the altered right of way.

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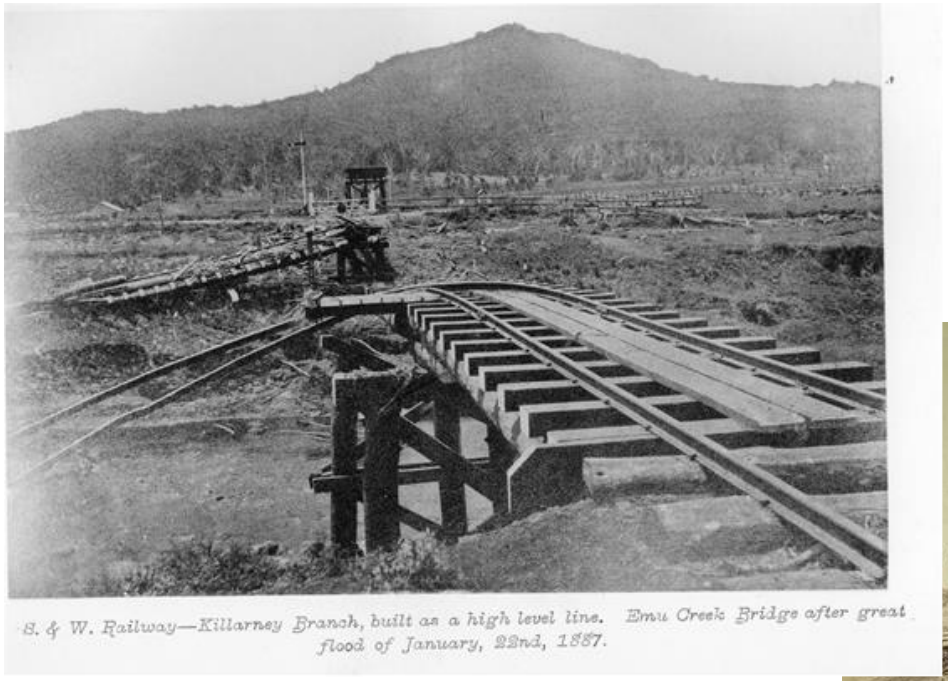
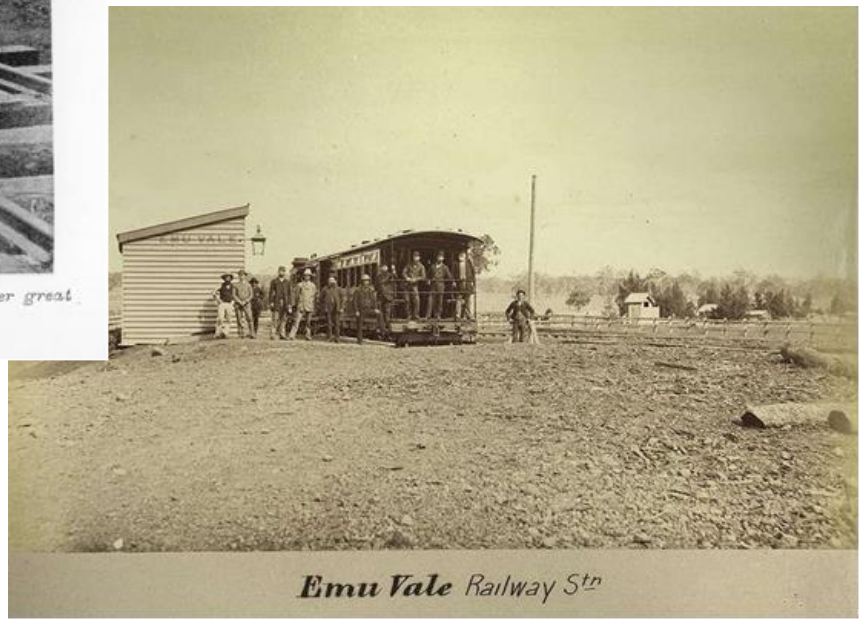


S. & W. Railway—Killarney Branch, built as a high level line. Emu Creek Bridge after great flood of January, 22nd, 1887.



The first section of the railway line to Killarney, opened to Emu Vale, in 1885. Phillips provided photographic evidence of damage on the branch by the floods of January, 1887, to demonstrate his concept of providing a surface railway, with bridges etc. below the flood level, in an album. QR Historical Collection.

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In July, 1887, the government called tenders for the purchase of 80 000 sleepers. Phillips was obviously in favour with the Griffith government, as the following year Phillips was appointed supervisor of construction of the first 70 kms (42 miles) of the Cloncurry railway, using his own sleepers.

The first 13 miles followed Phillips suggested route, to where a possible branch to Croydon, could deviate from the ‘main line’. Contracts for the sleepers were let overseas, and also to the Toowoomba Foundry Company- which set up a purpose built works for the sleepers at Wooloongabba.

The Annual Report for the Commissioner for Railways for 1888 reported on the works that were underway. Section One from Croydon was not contracted for in usual way as it was decided to use Mr George Phillips ‘patent new metal sleepers’ and Mr Phillips was allowed to survey and supervise construction, with a schedule of prices being agreed upon

Map of Australian Railway Systems of 1890, with Normanton to Croydon Railway under construction.

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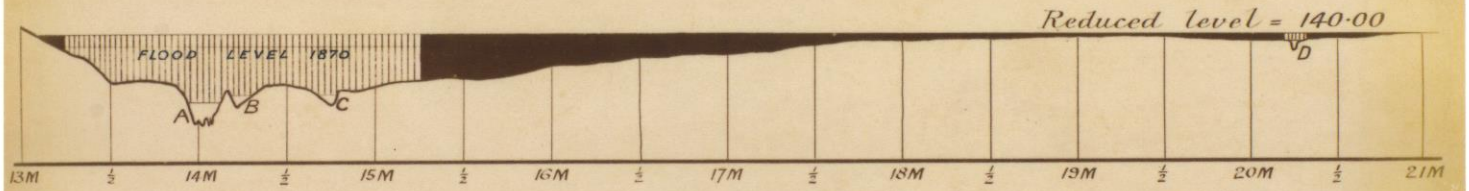
VALLEY OF NORMAN RIVER

SECTION AT RAILWAY CROSSING

LENGTH OF HIGH LEVEL BRIDGE REQUIRED = 2 MILES



The Normanton-Croydon Railway is on the surface except at the points A, B, C, D, where the rail level is shown by horizontal lines.
Estimated cost of High level line from 13 to 21 miles = £187,411. Actual cost of existing line from 13 to 21 miles = £21,090. Total approximate cost of Normanton-Croydon Railway with all sidings and branches, amounting to nearly 100 miles of rails, and including rolling stock = ~~£244,925~~ £249,442.
To make use of this crossing for a high level line, would lengthen the Croydon Railway by 13 miles.

Construction or material train, identified as being at Glenore siding, around 1888. The locomotive is a Fairlie A10. Image sourced from Phillips Album.

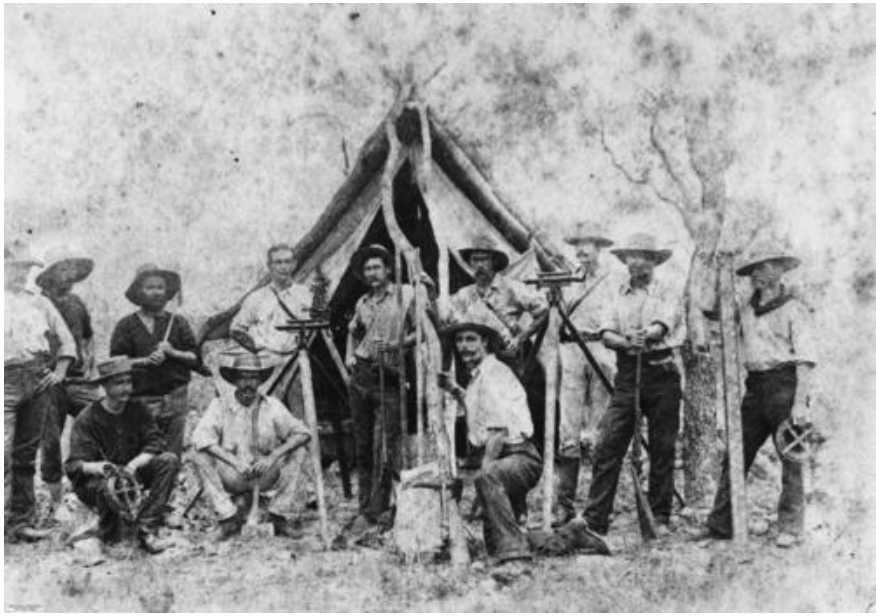
Head of road at 25½ miles. View from cab of engine, looking towards Normanton.

Head of road at 25½ miles: Plate laying gang.

Queensland Railways – A story of sleepers and Engineers

The opening of the line was not to be the end of controversy about the experiment and the use of Phillips steel sleepers. The Officer-in-Charge of Normanton stated that he believed maintenance on the Croydon line could be much improved in places, and that the “top of road” was not good. He advocated it could be much improved with a little stone or gravel ballast under supervision of a competent inspector. The wet season had shown that the soil packing from side cuttings from surrounding country was inferior due to a tendency to dissolve when soaked. River ballast or broken stones seemed necessary. The OiC stated however, that: "I do not wish to convey the impression that the road is absolutely unsafe for slow speed traffic”.

Again, as with hedging their bets on which way the railway from Normanton should be constructed and to where, the Commissioners for Railways commented that whilst they gave Mr Phillips: "every credit for the efficient manner in which he has performed the work for the Department", they felt that the line would only be suitable for dry weather traffic and would be expensive to maintain. The flooding in the Norman River during January 1890 covered 12½ miles (20kms) of line with water was seen as a vindication by Phillips, because trains were able to start operating again as soon as the waters receded. The line operated well and during the depression of the early 1890s, traffic was fairly well maintained.



Railway surveyors camp on the Croydon to Normanton railway line, attributed to1890. Men are standing with surveying equipment, axes, picks and rifles. George Phillips appears in the photo with his surveyors satchel. JOL. Image number: 11288

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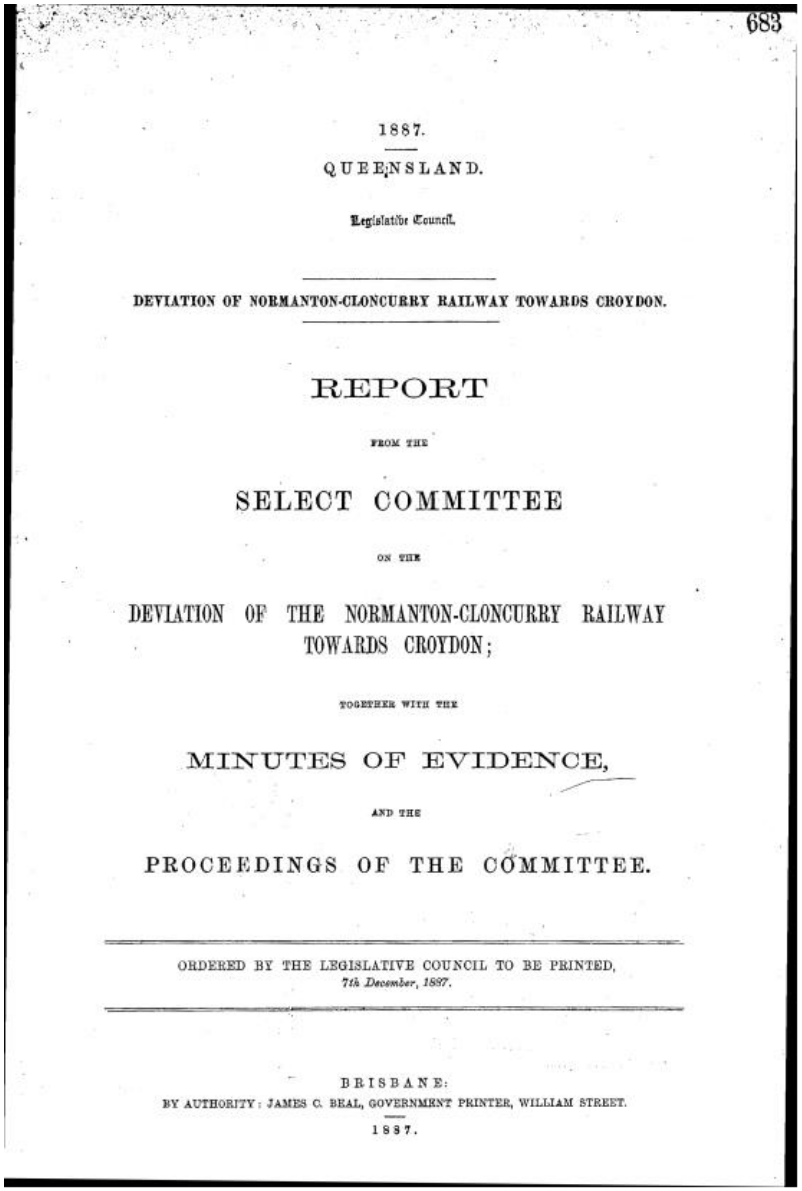
The success or otherwise of Phillips continued to fuel debate within the engineering community of Queensland. In his 1892 book setting out his concept of Pioneer Railways for Queensland, George Phillips, : “For the last nine years I have advocated a radical departure from established practice in the building of the pioneer railways of Queensland”. He especially highlighted the criticism that the concept and the railway in the Gulf had attracted yet, used it also as a justification of his approach to the low cost construction concept.

I have been subjected to a good deal of criticism for my temerity in advocating so many and so radical departures from established precedent and practice in this colony, but I am not in the least discouraged… Whenever I am in a position to retain the control of a fair length of railway built on the same general principles as the Normanton-Croydon line there will be an end to all caviling and doubt, as I can absolutely defy any engineer who believes in the necessity for artificial drainage and plentiful allowance of selected ballast to compete with me on even country in Queensland.

The relationship between H C Stanley and Phillips remained contentious and would continue so for many years. At the conclusion of his 1892 book on Pioneer Railways in Queensland, Phillips took aim at Stanley:

I had hoped that with the taking up of the experimental line, I and my system had passed out of the reach of the Chief Engineer; this however, unfortunately is not the case for the recent appointment of Mr Stanley as Chief Engineer of Queensland Railways, again brings my system under his review. For asserting a physical fact known to every schoolboy of the present day, Galileo was whipped; for asserting… that the surface soils… of Queensland can carry trains at fair rates of speed without the aid of artificial drainage and selected ballast, I am brought under the scourge of the Chief Engineer.



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1887.

QUEENSLAND.

Legislative Council.

DEVIATION OF NORMANTON-CLONCURRY RAILWAY TOWARDS CROYDON.

REPORT

FROM THE

SELECT COMMITTEE

ON THE

DEVIATION OF THE NORMANTON-CLONCURRY RAILWAY TOWARDS CROYDON;

TOGETHER WITH THE

MINUTES OF EVIDENCE,

AND THE

PROCEEDINGS OF THE COMMITTEE.

ORDERED BY THE LEGISLATIVE COUNCIL TO BE PRINTED,
7th December, 1887.

BRISBANE:
BY AUTHORITY: JAMES C. BEAL, GOVERNMENT PRINTER, WILLIAM STREET.
1887.

Queensland Railways – A story of sleepers and Engineers

For those who had come to depend on the railway to deliver a reliable form of transport on the goldfields, there was sense of shared jubilation with the opening of the railway.

Croydon literally had had drunk toasts at the opening of the railway in 1891

“Perhaps the most worthless stretch of land in all Queensland is that piece lying between Croydon and Normanton, a distance of ninety-four miles… in the wet season the most active duck ever born would be sure to get hopelessly bogged.

Before the railway was constructed the coach journey between the two towns was one of considerable difficulty and risk. Coaches were wrecked and bogged, while the unfortunate passengers were half poisoned with strange compounds obtained from unique accommodation houses or nearly done to death by mysterious insects which prowled around by night… All these terrors have been removed by the railway, and the traveller can now reach Normanton from Croydon in five or six hours. In the construction of the Normanton - Croydon Railway Mr. George Phillips's steel sleepers have been used, and have proved a great success…”

The *Queenslander*, Saturday 24 October 1891, page 799

The town of Croydon, with the original railway station at the end, of the street. View from a building looking onto Samwell Street, Croydon. JOL. Negative number: 47332.

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Phillips lived at Sandgate in a seaside residence for nearly 40 years, He was a prominent member of the Baptist Church and donated the land on which the Baptist Church stands today. In later years he sold his land at Sandgate and relocated to Alderley. Phillips was a man very much continually on the move and, apart from his travels between Sandgate and his offices in Brisbane by horse and buggy,retained a financial interest in one of the Croydon gold mines, and represented the Carpentaria electorate as a Member of the Legislative Assembly from 1893–1896. In 1903, Phillips visited New Caledonia, and his contributions after this visit to the Telegraph newspaper were apparently widely read. He also stood as the Member for Nundah in 1907.

For many years he was a leading member and fellow of the Royal Geographical Society, and contributed several valuable papers. Some of Phillips' other railway works show how much he was kept busy. He reported on the Humpybong (Redcliffe) railway in 1892 (opened in 2016) inspected the route of the Cairns Mulgrave Shire Tramway in 1895, and in 1896 he was appointed Inspector of Artesian Bores.

He also surveyed a railway from Clermont to Charters Towers, the Lahey's Canungra logging tramway, while in 1899 he was appointed to a three man board and Court of Inquiry that was charged with investigating two boiler explosions on the Queensland Railways.

Construction train on the Beaudesert Tramway, around 1902-3. QR Historical Collection .

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Queensland Railways – A story of sleepers and Engineers

One thing that was obvious about Phillips and his prolific career, is that he was extremely competent, and also enjoyed working in Queensland. The engineers and contractors of the mid latter Victorian era in Queensland, and into the early 20th century were remarkable not only in their experience, but, also in their interests.

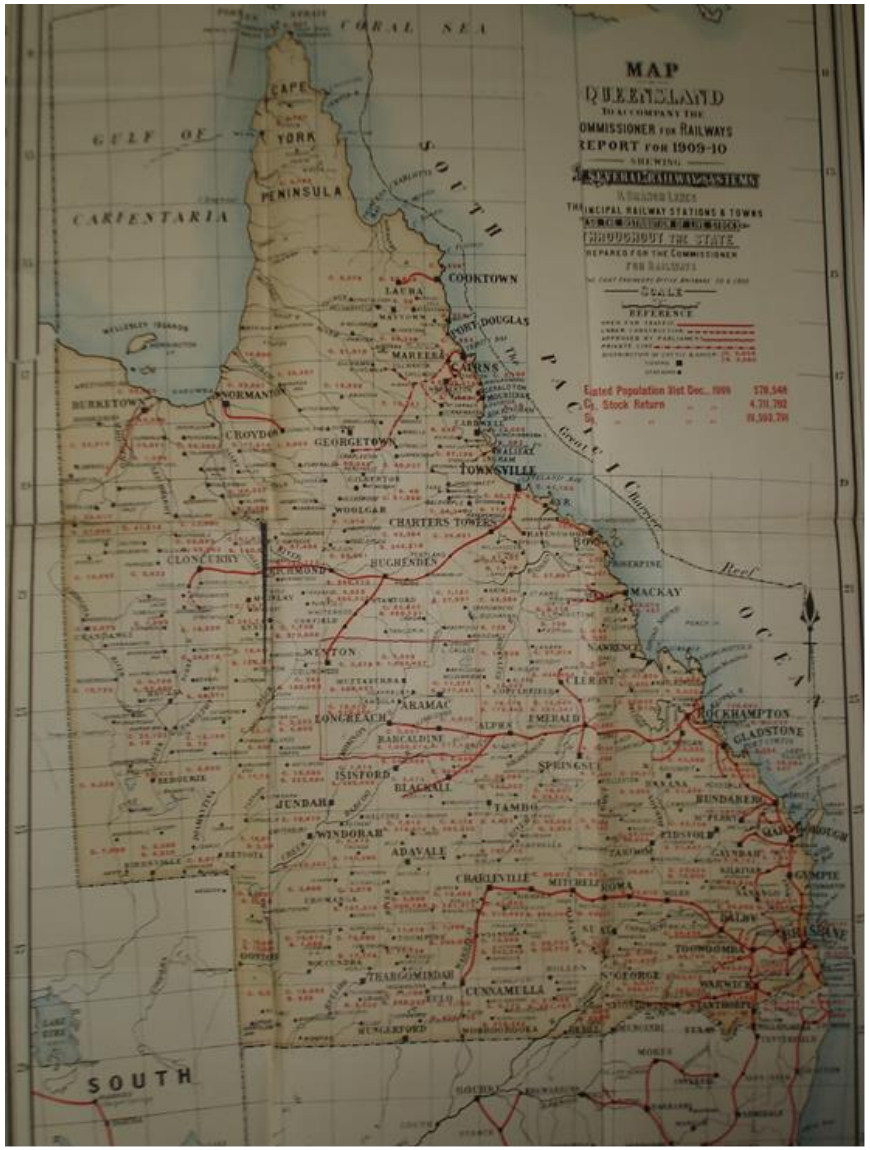
The engineers and contractors of the mid- to latter-Victorian era in Queensland and into the early twentieth century were remarkable, not only in their experience, but also in their interests.

George Phillips was actively pursuing other projects of interest to him prior to his death in 1921. He had been studying the Great Pyramid of Gizeh and also claimed to have had discovered the secret cubit. He also prepared a report about using water from the freshwater lakes on Stradbroke Island as a source of drinking water for Brisbane. He was involved with Royal Commissions on railways to the Gulf shortly before his death.

There was an interesting comparison made with him in relation to the engineer Robert Ballard, who had been in charge of the heavy works on the Main Range railway to Toowoomba (Section Five of the Southern and Western), and the art of self promotion of both…

“George Phillips strove zealously to make Queensland great. He was a pioneer in thought as well as in the physical sense of exploration. All newspaper men knew him a man of great ability and of high professional reputation, but always ready for a chat or a joke and never failing when information was required… Quite recently reference was made to the work of [Robert] Ballard in pioneering, the cheap surface lines but really George Phillips did more than Ballard both in propaganda and in practical work.”

Brisbane Courier, Saturday 17 January 1925, page 19



The Queensland Railways system in 1909-10,showing the Normanton-Croydon Railway, plus the other isolated railway systems of the state, prior to the passing of the *Great Western Railway,* and *North Coast Railway Acts*, of 1910.

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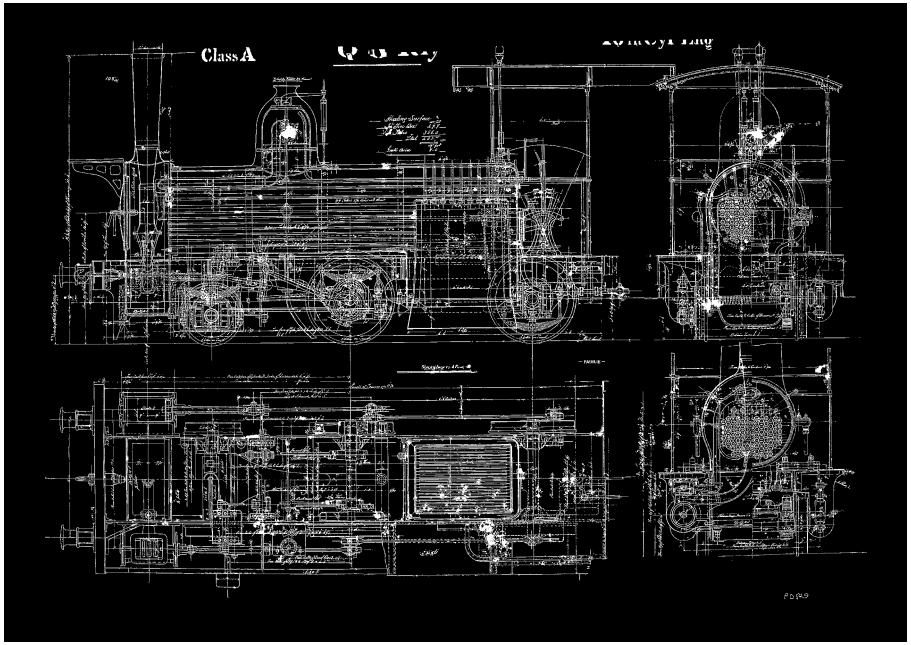
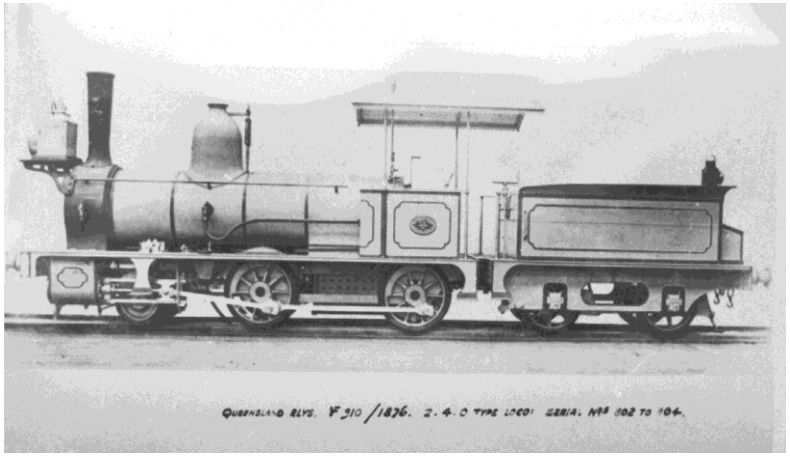
Queensland Railways – A story of sleepers and Engineers

Phillips was to go on to truly make his mark, on the railway landscape of Queensland. Around the time of the publication of ‘Pioneer Railways for Queensland’, he gave an interview to a reporter in the Brisbane Courier, and he again pushed for his ideas on the developmental railway

“Light railways" have for many years been a special " hobby" with Mr. George Phillips, the late member for Carpentaria. In and out of Parliament, he has never wearied of urging the necessity for and the great advantages to be obtained from a cheaper system of railway construction than that followed in the colony…

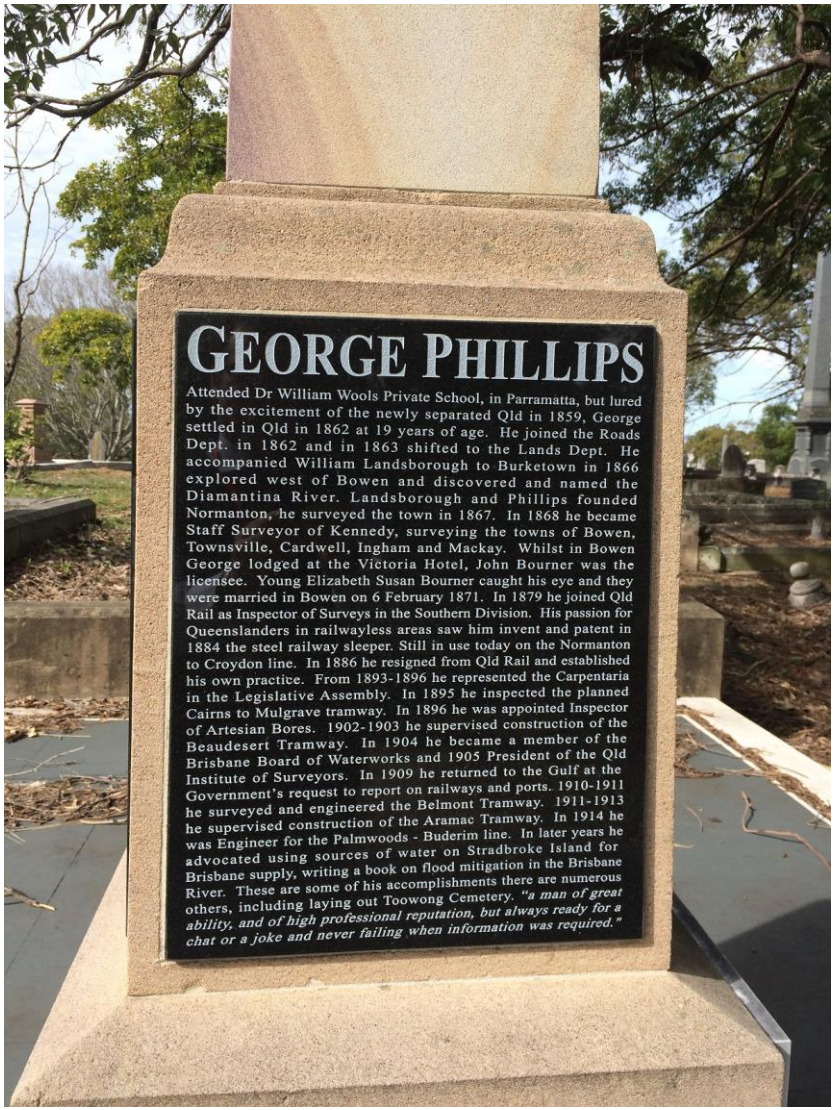
Let every facility be given for the laying down of rails, heavy rails, medium rails, and light rails, on roads, or off roads, anywhere, everywhere, and almost anyhow. Remove all artificial and arbitrary restrictions on the laying down of rails ; get all the traffic you can to run on rails, and the country is bound to go ahead, as fast as nature will permit.”

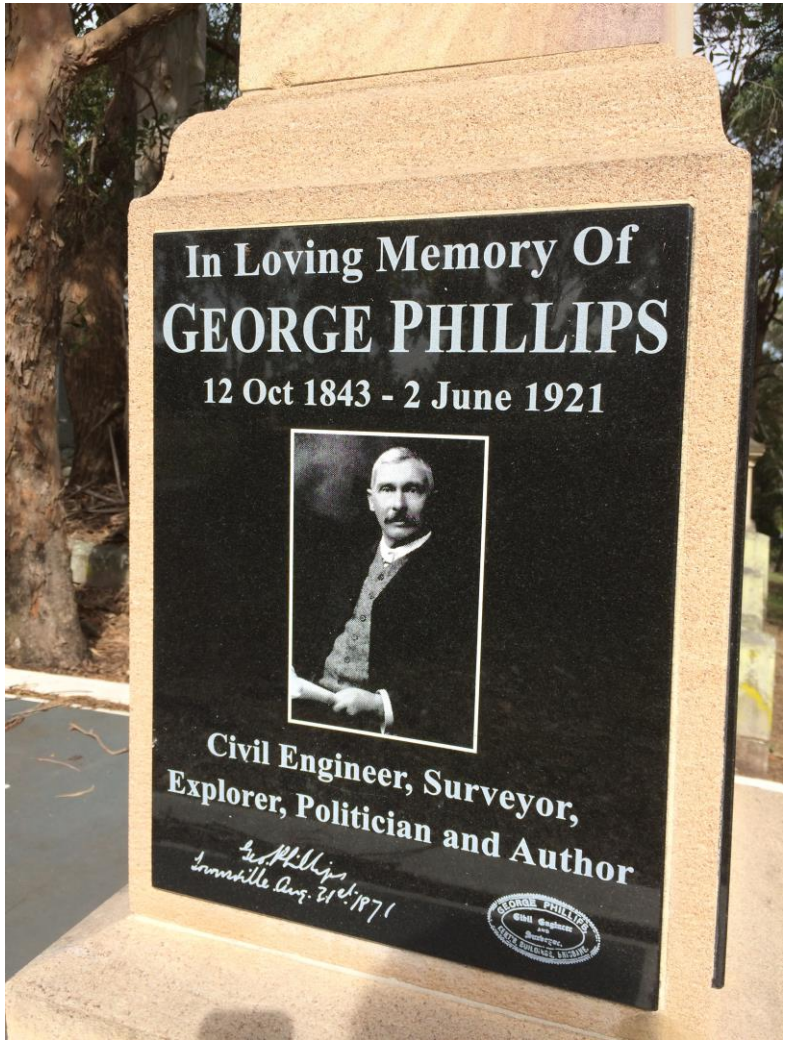




In 1890, Normanton Nos 1, 2 and 3 were became part of the system wide Queensland Government Railways (QGR) renumbering list as: no. 202 (Vulcan 802), No. 203 (Vulcan 803) No. 204 (Vulcan 804). Two of these locos were condemned at Normanton in 1895. QR Historical Collection.

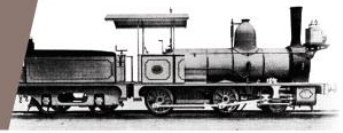
QueenslandRail


GEORGE PHILLIPS
Attended Dr William Wools Private School, in Parramatta, but lured by the excitement of the newly separated Qld in 1859, George settled in Qld in 1862 at 19 years of age. He joined the Roads Dept. in 1862 and in 1863 shifted to the Lands Dept. He accompanied William Landsborough to Burketown in 1866 explored west of Bowen and discovered and named the Diamantina River. Landsborough and Phillips founded Normanton, he surveyed the town in 1867. In 1868 he became Staff Surveyor of Kennedy, surveying the towns of Bowen, Townsville, Cardwell, Ingham and Mackay. Whilst in Bowen George lodged at the Victoria Hotel, John Bourner was the licensee. Young Elizabeth Susan Bourner caught his eye and they were married in Bowen on 6 February 1871. In 1879 he joined Qld Rail as Inspector of Surveys in the Southern Division. His passion for Queenslanders in railwayless areas saw him invent and patent in 1884 the steel railway sleeper. Still in use today on the Normanton to Croydon line. In 1886 he resigned from Qld Rail and established his own practice. From 1893-1896 he represented the Carpentaria in the Legislative Assembly. In 1895 he inspected the planned Cairns to Mulgrave tramway. In 1896 he was appointed Inspector of Artesian Bores. 1902-1903 he supervised construction of the Beaudesert Tramway. In 1904 he became a member of the Brisbane Board of Waterworks and 1905 President of the Qld Institute of Surveyors. In 1909 he returned to the Gulf at the Government's request to report on railways and ports. 1910-1911 he surveyed and engineered the Belmont Tramway. 1911-1913 he supervised construction of the Aramac Tramway. In 1914 he was Engineer for the Palmwoods - Buderim line. In later years he advocated using sources of water on Stradbroke Island for Brisbane supply, writing a book on flood mitigation in the Brisbane River. These are some of his accomplishments there are numerous others, including laying out Toowong Cemetery. "a man of great ability, and of high professional reputation, but always ready for a chat or a joke and never failing when information was required."


In Loving Memory Of
GEORGE PHILLIPS
12 Oct 1843 - 2 June 1921
Civil Engineer, Surveyor,
Explorer, Politician and Author

A celebration of an engineering achievement

Normanton to Croydon Railway - The Track



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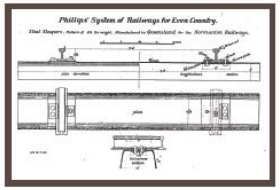
A railway to service the goldfields

The railway line linking Normanton to Croydon some 94 miles (169 km) was built between 1888 and 1891 to service the goldfields near Croydon. It remains the last isolated line of Queensland Rail still in use. The design principles adopted by the designer George Phillips were a radical departure from established practice in the building of the pioneer railways of Queensland at the time. The traditional form of railway construction was more akin to the European methods whereby track was laid on sleepers, supported on ballast and generally above flood levels; which was expensive. Phillips proposed that for the flat country of Western Queensland, a more economical solution was to lay the track directly on sleepers on prepared natural surface. When constructed, the railway utilised an innovative system of submersible track with patented steel sleepers which still remain in use today.



A design engineered for the tropics

The design, patented by Phillips in 1884, had open ends for his steel sleepers. Phillips also devised a series of rail fastenings and clips to hold the rails to the sleepers. In advance of laying the rail, the right of way was ploughed and lightly harrowed. The sleeper was then laid directly on the ground surface, gradually sinking with the weight of trains until the sides of the sleeper cut through the ploughed earth and as a result, the sleeper came to be packed with soil; the sleepers were coated in pitch to provide a waterproofing. Part of Phillips' reasoning for the use of steel as a construction material was related to his own direct experience in this part of the world. He was acutely aware of the difficulties that would be encountered in obtaining adequate supplies of timber for building and railway sleepers. Steel sleepers were also resistant to attacks from termites, a common occurrence for timber in the tropics.

George Phillips

George Phillips was born in England in 1843 and died on June 2, 1921 in Queensland; his family migrated to Australia when he was eight. He qualified as a surveyor. In 1874 he joined the Railway Department and remained in its service until 1886 as surveyor and engineer. In 1888 Phillips was contracted by the govemment to survey and supervise the construction of the Normanton to Croydon Railway. He demonstrated his ingenuity in challenging the design standards of the day, in developing technical solutions appropriate to the environment and in supervising the construction of the railway. From 1893 to 1896 Phillips was the MLA for Carpentaria

The railway line 125 years after construction

Laying the sleepers

Above: Head of construction at the 25½ mile mark looking towards Croydon, 1888. The right of way can be seen prepared, with sleepers ready to be placed onto the ground by the plate-laying gang. Rails would then be fastened to the sleepers. The photo was taken with the photographer balancing on top of the cab of the A10 Class locomotive. (Phillips Album)

A construction or material train, identified as being the 'head of road at 25½ miles', with a plate laying gang. The locomotive is a Fairlie A10 Class. The gang is laying the Phillips sleepers onto the prepared ground, with rails awaiting fastening. (Phillips Album)

Sleeper statistics

The number of steel sleepers used is over 200,000. Sleepers came from the Toowoomba Foundry in Brisbane and also from England. Each sleeper weighed around 40 kg.

Where steel sleepers could not be supplied in time, timber sleepers were used and once they deteriorated, they were replaced by steel.

Large stacks of steel railway sleepers in the railway yard at Normanton, 1904. These sleepers were delivered late for the construction of the Normanton Croydon line, after Phillips opted for use of timber sleepers. The majority were used to replace timber sleepers on the line, and also reused during World War II. (Picture Queensland, State Library of Queensland)

Top image: Queensland Railways A10 Fairlie class locomotive (Picture www.croydon.qld.gov.au/heritage)

ENGINEERING HERITAGE MARKER

Normanton to Croydon Railway - The Track was recognised by Engineers Australia with an Engineering Heritage Marker in 2018.

ENGINEERS AUSTRALIA

QueenslandRail

Normanton to Croydon Railway - The Track

A celebration of an engineering achievement

- **Challenging the standards of the day**

  - Early Standards influenced by European designs whereby track was laid on sleepers supported on ballast and generally above flood levels. This was expensive.

  - Railways for even country
    Examined the need for artificial drainage and selected ballasted.

  - Phillips proposed that for the flat country of western Queensland a more economical solution was to lay the track directly on sleepers on prepared natural surface.

ENGINEERS AUSTRALIA QueenslandRail

Normanton to Croydon Railway - The Track

A celebration of an engineering achievement

- Challenging the standards of the day
- Development of western Queensland
  - Pioneers in the late 1800s
  - Challenges of Distance
  - Goldfields
  - Natural topography and weather of North Queensland.

ENGINEERS AUSTRALIA

QueenslandRail

Normanton to Croydon Railway - The Track

A celebration of an engineering achievement

- Challenging the standards of the day
- Development of western Queensland
- Driving value for money
  - Fitness for purpose
  - Budget pressures

ENGINEERS AUSTRALIA

QueenslandRail

Normanton to Croydon Railway - The Track

A celebration of an engineering achievement

- Challenging the standards of the day
- Development of western Queensland
- Driving value for money
- Innovation and experiments
  - Submersible track and patented steel sleepers
  - Trials on Fassifern Branch Railway outside Ipswich

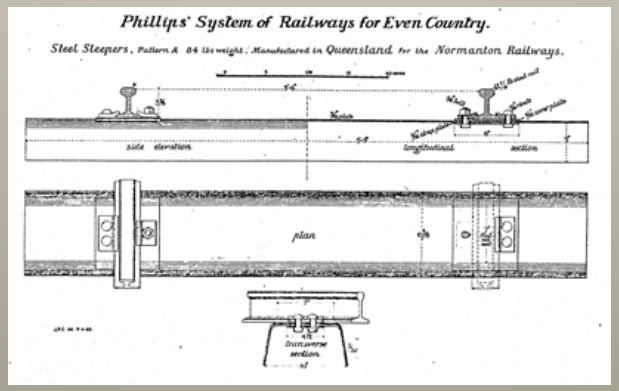
ENGINEERS AUSTRALIA

QueenslandRail

Normanton to Croydon Railway - The Track

A celebration of an engineering achievement

- Challenging the standards of the day
- Development of western Queensland
- Driving value for money
- Innovation and experiments
- Patents



ENGINEERS AUSTRALIA

QueenslandRail

Normanton to Croydon Railway - The Track

A celebration of an engineering achievement

- Challenging the standards of the day
- Development of western Queensland
- Driving value for money
- Innovation and experiments
- Patents
- Political networking
  - Good ideas are not enough
  - Support in the right places

ENGINEERS AUSTRALIA

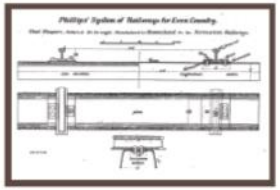
QueenslandRail

Normanton to Croydon Railway - The Track

For more details on this and other Engineering Heritage Markers, visit engineersaustralia.org.au/portal/heritage/search

A railway to service the goldfields

The railway line linking Normanton to Croydon some 94 miles (169 km) was built between 1888 and 1891 to service the goldfields near Croydon. It remains the last isolated line of Queensland Rail still in use. The design principles adopted by the designer George Phillips were a radical departure from established practice in the building of the pioneer railways of Queensland at the time. The traditional form of railway construction was more akin to the European methods whereby track was laid on sleepers, supported on ballast and generally above flood levels; which was expensive. Phillips proposed that for the flat country of Western Queensland, a more economical solution was to lay the track directly on sleepers on prepared natural surface. When constructed, the railway utilised an innovative system of submersible track with patented steel sleepers which still remain in use today.



A design engineered for the tropics

The design, patented by Phillips in 1884, had open ends for his steel sleepers. Phillips also devised a series of rail fastenings and clips to hold the rails to the sleepers. In advance of laying the rail, the right of way was ploughed and lightly harrowed. The sleeper was then laid directly on the ground surface, gradually sinking with the weight of trains until the sides of the sleeper cut through the ploughed earth and as a result, the sleeper came to be packed with soil; the sleepers were coated in pitch to provide a waterproofing. Part of Phillips' reasoning for the use of steel as a construction material was related to his own direct experience in this part of the world. He was acutely aware of the difficulties that would be encountered in obtaining adequate supplies of timber for building and railway sleepers. Steel sleepers were also resistant to attacks from termites, a common occurrence for timber in the tropics.

George Phillips

George Phillips was born in England in 1843 and died on June 2, 1921 in Queensland; his family migrated to Australia when he was eight. He qualified as a surveyor. In 1874 he joined the Railway Department and remained in its service until 1886 as surveyor and engineer. In 1888 Phillips was contracted by the government to survey and supervise the construction of the Normanton to Croydon Railway. He demonstrated his ingenuity in challenging the design standards of the day, in developing technical solutions appropriate to the environment and in supervising the construction of the railway. From 1893 to 1896 Phillips was the MLA for Carpentaria

The railway line 125 years after construction

Laying the sleepers

Above: Head of construction at the 25½ mile mark looking towards Croydon, 1888. The right of way can be seen prepared, with sleepers ready to be placed onto the ground by the plate-laying gang. Rails would then be fastened to the sleepers. The photo was taken with the photographer balancing on top of the cab of the A10 Class locomotive. (Phillips Album)

A construction or material train, identified as being the 'head of road at 25½ miles', with a plate laying gang. The locomotive is a Fairlie A10 Class. The gang is laying the Phillips sleepers onto the prepared ground, with rails awaiting fastening. (Phillips Album)

Sleeper statistics

The number of steel sleepers used is over 200,000. Sleepers came from the Toowoomba Foundry in Brisbane and also from England. Each sleeper weighed around 40 kg.

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Engineers Australia thanks Queensland Rail at Normanton for the erection of the Interpretation Panel and Engineering Marker at the Normanton Station On 10th September 2019

The celebrations at Normanton

Normanton to Croydon Railway - The Track

A celebration of an engineering achievement

Thank You

- **A special acknowledgement to Albert Jeays**
  Grandson of George Phillips
  for his help in providing material for this recognition

- **Queensland Rail and staff**

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